



GEO 07-Teacher: Population Pyramids



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Subject Area

Geography

Suggested Level

Years 8–9

Overview

This activity studies Australia's population structure beginning with the creation of a population pyramid for Australia before comparing the animated population pyramids for the States and Territories. The pyramid may be drawn on paper or constructed interactively using a computer. Students are guided on how to describe the shape of a population pyramid. Sex ratios are explored through a group activity. The purpose of this activity is to encourage students to develop their observation of graphic resources and to transfer information to a written descriptive piece. Explanations for the shape of pyramids occur in the next activity, Geo_08.

Requirements

- Student worksheet
- Computer (Questions 6 onwards)
- Calculator
- To view the animated population pyramids on the ABS website you may need to install the free plug in '[Adobe Flash Player](#)' on your computer.

Instructions

Task One: The Structure of the Australian Population

What happens in my age group?

Population structure refers to the composition of the population by age and sex. The characteristics of the population structure may be illustrated through the use of a population pyramid. To view examples go to [Animated Population Pyramids](#).

1. Ask students to collect statistics about their own age group from the animated Australian population pyramid. Enter data for both the current year and the year 2050. Record the data in a table similar to Table 1 on student worksheet.

TABLE 1. STATISTICS ABOUT MY AGE GROUP BORN.....		YEAR I WAS
	This Year	2050
My age		
Number of males of my age	1.	•
Number of females of my age		

1

1



Total population in my age group		
Sex ratio for my age group		
Total Population of Australia		

2. Students use the information provided with the animated pyramid to explain how the sex ratio is calculated and to comment on the changes in the sex ratio through their lifetime.

An answer may include the following:

Sex ratio is the proportion of males to females, expressed as males per 100 females.

Students should draw on values from Table 1 and the animated population pyramid for Australia. They should recognise that males outnumber females from birth to approximately 60 years of age, with sex ratios decreasing from approximately 105 to close to 100. Thereafter, females outnumber males represented by sex ratios which are likely to decline to 70 as people reach 90 years of age.

Task Two: What do the Australian or the Indigenous Population Profiles for Australia look like?

Preparing the Data

Data is provided for the Estimated Resident Population, 2010 and the Indigenous Population, 2006. Students choose to graph either of these values.

3. In order to develop an understanding of how the data for a population pyramid is compiled, students are asked to complete the missing values in the tables of data for either the Estimated Resident Population of Australia, June 2010 (Table 2) or the Indigenous population, 2006 (Table 3). Completed tables are below.

TABLE 2: ESTIMATED RESIDENT POPULATION OF AUSTRALIA, AGE AND SEX, 30 JUNE 2010.

Years	Males	% Persons	Females	% Persons	Persons
0-4	749,322	3.4	711,435	3.2	1,460,757
5-9	701,176	3.1	664,543	3.0	1,365,719
10-14	719,775	3.2	683,954	3.1	1,403,729
15-19	770,551	3.5	729,803	3.3	1,500,354
20-24	850,180	3.8	798,065	3.6	1,648,245
25-29	843,634	3.8	818,706	3.7	1,662,340
30-34	767,118	3.4	765,257	3.4	1,532,375
35-39	801,784	3.6	813,374	3.6	1,615,158
40-44	771,081	3.5	780,356	3.5	1,551,437
45-49	780,525	3.5	794,015	3.6	1,574,540



50-54	726,190	3.3	743,127	3.3	1,469,317
55-59	655,407	2.9	669,617	3.0	1,325,024
60-64	603,728	2.7	608,057	2.7	1,211,785
65-69	449,957	2.0	458,975	2.1	908,932
70-74	343,680	1.5	366,513	1.6	710,193
75-79	256,049	1.1	295,493	1.3	551,542
80-84	188,941	0.8	250,340	1.1	439,281
85-89	98,996	0.4	168,059	0.8	267,055
90+	39,010	0.2	92,054	0.4	131,064
Total Persons Australia 22,328,847					

Source: Australian Demographic Statistics, Dec 2010. (Cat. no. 3101.0)

TABLE 3. AGE BY SEX FOR INDIGENOUS PERSONS 2006 CENSUS OF POPULATION AND HOUSING AUSTRALIA

	Males	% Persons	Females	% Persons	Persons
0-4 years	28,273	6.2	27,306	6.0	55,579
5-9 years	29,611	6.5	28,353	6.2	57,964
10-14 years	29,502	6.5	28,088	6.2	57,590
15-19 years	24,883	5.5	23,626	5.2	48,509
20-24 years	18,660	4.1	18,849	4.1	37,509
25-29 years	14,923	3.3	15,899	3.5	30,822
30-34 years	14,992	3.3	16,475	3.6	31,467
35-39 years	14,393	3.2	16,480	3.6	30,873
40-44 years	12,631	2.8	14,249	3.1	26,880
45-49 years	10,686	2.3	11,845	2.6	22,531
50-54 years	8,601	1.9	9,380	2.1	17,981
55-59 years	6,261	1.4	6,945	1.5	13,206
60-64 years	4,228	0.9	4,747	1.0	8,975
65 years and over	6,423	1.4	8,707	1.9	15,130
Total	224,067	49.2	230,949	50.8	455,017

Source: 2006 Census Community Profile Series: Indigenous Profile

Task Three: Drawing a Population Pyramid

- When the table is complete, ask the students to construct a population pyramid for either the Australian population in 2010 or the Indigenous population in 2006, using either the paper or the interactive template (Indigenous population only) provided at the end of the activity.

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The [interactive template](#) in MS Excel format contains the Indigenous population data and a print friendly worksheet which students may edit. Students enter data on line and watch the pyramid develop. They may copy and paste the completed pyramid into their work using the 'Print friendly worksheet'.

FIGURE 1: EXAMPLE OF PYRAMID OF ESTIMATED RESIDENT POPULATION OF AUSTRALIA, JUNE 2010 DRAWN WITH EXCEL.

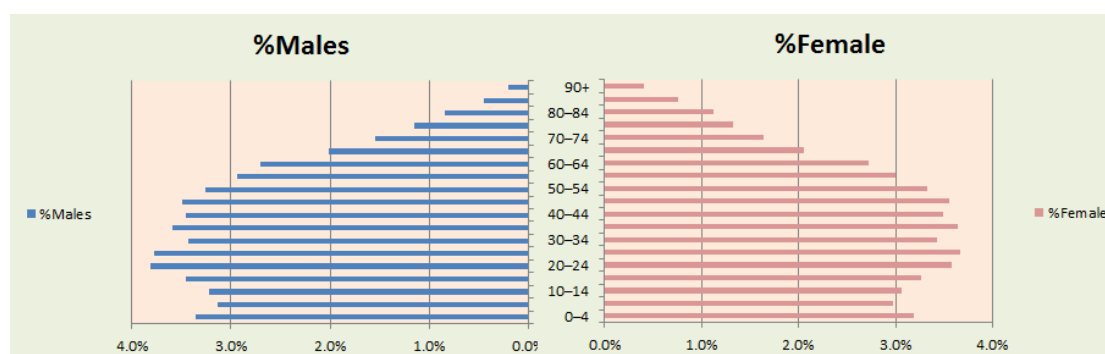


FIGURE 2A: EXAMPLE OF THE INTERACTIVE PYRAMID FOR THE INDIGENOUS POPULATION OF AUSTRALIA, 2006

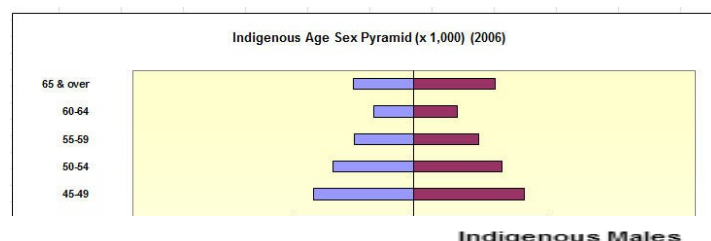
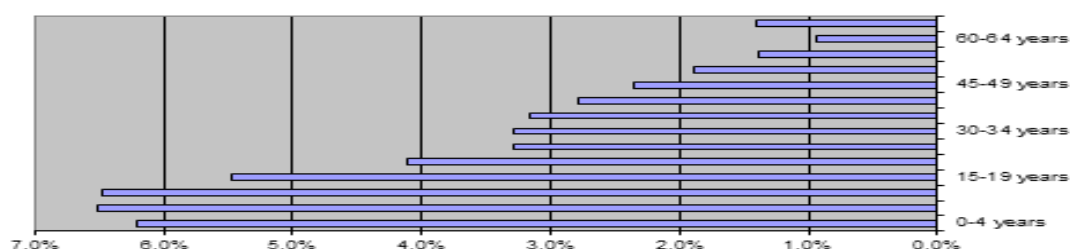


FIGURE 2B: EXAMPLE OF THE INDIGENOUS POPULATION PYRAMID, 2006, DRAWN USING EXCEL.





Describing the Population Pyramid for Indigenous Australians

5. Ask the students to describe the shape of the population pyramid for the pyramid they have drawn, using the following as guidelines: width of base, width of top, shape of the sides, height of the graph, proportion of males and females. Students should support their writing with statistics taken from the pyramid.

An answer may include

Australian Population

The population pyramid for Australia or profile has a base which is narrower than parts of the pyramid above. The age categories of 0-4, 5-9 and 10 - 14 each make up approximately 6% of the population. The top of the pyramid (or profile) extends to 90 years and above. It is smaller than the base with less than 2% in each of the age categories above 80 years of age. The sides of the pyramid bulge in between the 20 - 54 age groups but taper gently above this. The 20-25 year age group has most people. Males and females are balanced in most age categories until age 80 and above when women outnumber men.

Indigenous Population

The Indigenous population pyramid or profile has a wide base. The age categories of 0-4, 5-9 and 10 - 14 each make up just over 12% of the Indigenous population and 56.5% of the Indigenous population is under 25 years of age. The top of the pyramid (or profile) is much smaller with 60 - 64 year olds making up 1.9% of the Indigenous population. The topmost age category (3.3% of Indigenous population) includes all Indigenous people over 65 years of age and is wider than the category beneath it. The sides of the pyramid taper steeply from the base to the top, although there is a slight narrowing in the 0 - 4 age group. Males outnumber females in the 0 - 19 age groups but women outnumber men from 25 years onwards.

Task Four: Exploring Population Pyramids and Sex Ratios

Students will require access to a computer to complete this task.

6. Divide the class into groups of eight students. Allocate a state or territory of Australia to each student in the group. Ask the students to find the animated population pyramid for their given state or territory and to create an annotated thumbnail sketch (or outline) of its shape for the most recent year, labelling features requested.

Sex Ratios

7. Students study the changing nature of the sex ratio by exploring the surplus of males and females in different age categories and different states and completing questions 7 - 9 on worksheet 2.
8. Students are asked to compare sex ratios for a 26 and a 75 year old, Claire and John.

Answers may include:

Year 2011	Sex ratios for age 26	Sex ratios for age 75
Australia	102.23	90.54
NSW	100.86	89.19



Vic	101.62	88.41
Queensland	102.46	96.71
SA	104.78	87.52
WA	106.33	91.77
Tasmania	97.42	89.89
NT	105.31	113.54
ACT	103.14	86.97

Answer: Students may suggest on the basis of the information above that John goes to the ACT and Claire to WA.

- Students compare their outlines with those created for other state and territories.

Similar population structures occur in New South Wales and Victoria, Queensland and WA. Population structure is different in ACT, SA, Tasmania and NT.

Task Five: How does Population Structure Change over Time?

- Using the state and territory allocated, students draw thumbnail outline sketches for 1971 and 2056.
- Students compare the pyramids for 1971 and 2056 and describe the changes over time that they observe.

Although each state will display its own pattern, the change from a pyramid shape to a more bottle or straighter shape should be identified.

References

(Note: Links to ABS publications are to the most recent release. Previous releases can be accessed by selecting the 'Past & Future Releases' tab.)

[Australian Bureau of Statistics Animated Population Pyramids](#)

Feedback

To provide any feedback regarding this activity, please contact ABS Education Services on 1800 623 273 or email education@abs.gov.au.